WHAT IS CLAIMED IS:

1. A halftone dot conversion apparatus for converting tone image data representative of an image with tone values into halftone dot image data representative of an image with halftone dots having sizes according to the tone values, the halftone dot conversion apparatus comprising:

a tone value obtaining section that obtains tone values of the tone image data; and

a halftone dot conversion section that forms the halftone dots by sets of drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters blanks of the drawing pixels about the halftone dots, on at least a predetermined range of tone values.

2. A halftone dot conversion apparatus according to claim 1, wherein the halftone dot conversion section always scatters the blanks of the drawing pixels about the halftone dots, at associated positions, respectively, regardless of the tone values.

3. A halftone dot conversion apparatus according to claim 1, wherein the halftone dot conversion section increases or decreases the number of blanks scattered about the halftone dots in accordance with the tone values.

4. A halftone dot conversion apparatus according to claim 1, wherein the halftone dot conversion section determines geometry of halftone dots using a dot matrix defining halftone dots by an arrangement of thresholds to be compared with the tone values.

5. A halftone dot conversion apparatus according to claim 1, wherein the halftone dot the halftone dot conversion section further comprises:

a set geometry determination section that determines geometry of the sets in accordance with the tone values obtained by the tone value obtaining section;

a blank position determination section that determines candidate positions for blanks scattered about the sets; and

a synthesizing section that synthesizes the geometry of the sets determined by the set geometry determination section with the candidate positions determined by the blank position determination section.

6. A halftone dot conversion apparatus according to claim 5, wherein the tone image data represents with the tone values a plurality of color separation images in which a color image is color-separated with a plurality of colors, and

wherein the blank position determination section

determines candidate positions for blanks in the color separation images, by means of using a blank position definition in which the candidate positions for blanks are defined on a unit area on an image and are repeatedly utilized on the image, and as the blank position definition, mutually different sizes of unit areas being applied for the plurality of color separation images.

7. A halftone dot conversion apparatus according to claim 1, wherein the tone image data represents with the tone values a plurality of color separation images in which a color image is color-separated with a plurality of colors, and

wherein the halftone dot conversion section scatters blanks, in which arrangement patterns are mutually different from one another, about the halftone dots, for the plurality of color separation images.

8. A halftone dot conversion apparatus according to claim 1, wherein the halftone dot conversion section has a plurality of halftone dot conversion systems including a first halftone dot conversion system that forms the halftone dots by sets of drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters blanks of the drawing pixels about the halftone dots, on at least predetermined range of tone values, and wherein the halftone dot

conversion section uses the first halftone dot conversion system of the plurality of halftone dot conversion systems, on image data for an ink jet printer.

9. A halftone dot conversion apparatus for converting tone image data representative of an image with tone values into halftone dot image data representative of an image with halftone dots having sizes according to the tone values, the halftone dot conversion apparatus comprising:

a tone value obtaining section that obtains tone values of the tone image data; and

a halftone dot conversion section that forms the halftone dots by sets of drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters drawing pixels out of the halftone dots, on tone values except for a predetermined range in highlight.

10. A halftone dot conversion apparatus according to claim 9, wherein the tone image data represents an image with tone values representative of dot% density of 0% to 100%, and

wherein the halftone dot conversion section uses, as the predetermined range, a range between lower limit 0% of the tone values and upper limit 5% to 15%.

11. A halftone dot conversion apparatus according to claim 9, wherein the halftone dot conversion section determines geometry of the halftone dots using a dot matrix defining halftone dots by an arrangement of thresholds to be compared with the tone values.

12. A halftone dot conversion apparatus according to claim 9, wherein the halftone dot the halftone dot conversion section further comprises:

a set geometry determination section that determines geometry of the sets in accordance with the tone values obtained by the tone value obtaining section;

a scattering position determination section that determines candidate positions for drawing pixels scattered out of the sets; and

a synthesizing section that synthesizes the geometry of the sets determined by the set geometry determination section with the candidate positions determined by the scattering position determination section.

13. A halftone dot conversion apparatus according to claim 9, wherein the halftone dot conversion section increases or decreases the number of drawing pixels scattered out of the halftone dots in accordance with the tone values.

14. A halftone dot conversion apparatus according

to claim 9, wherein the tone image data represents images of four colors of cyan, magenta, yellow, and black, and

wherein the halftone dot conversion section scatters drawing pixels out of the halftone dots, only when the color of the image is black.

15. A halftone dot conversion apparatus according to claim 9, wherein the tone image data represents images of four colors of cyan, magenta, yellow, and black, and

wherein the halftone dot conversion section scatters drawing pixels out of the halftone dots, only when the color of the image is another color except yellow.

16. A halftone dot conversion apparatus for converting tone image data representative of an image with tone values into halftone dot image data representative of an image with halftone dots having sizes according to the tone values, the halftone dot conversion apparatus comprising:

a tone value obtaining section that obtains tone values of the tone image data; and

a halftone dot conversion section that forms the halftone dots by sets of a first drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters a second drawing pixels having a color lighter than a color of the first drawing pixels out of the halftone dots.

17. A halftone dot conversion apparatus according to claim 16, wherein the halftone dot conversion section scatters the second drawing pixels out of the halftone dots, on tone values except for a predetermined range in highlight.

18. A halftone dot conversion apparatus according to claim 17, wherein the tone image data represents an image with tone values representative of dot% density of 0% to 100%, and

wherein the halftone dot conversion section uses, as the predetermined range, a range between lower limit 0% of the tone values and upper limit 5% to 15%.

19. A halftone dot conversion apparatus according to claim 16, wherein the halftone dot conversion section increases or decreases the number of the second drawing pixels scattered out of the halftone dots in accordance with the tone values.

20. A halftone dot conversion apparatus according to claim 16, wherein the tone image data represents images of four colors of cyan, magenta, yellow, and black, and

wherein the halftone dot conversion section scatters the second drawing pixels out of the halftone dots, only when the color of the image is black.

21. A halftone dot conversion apparatus according to claim 16, wherein the tone image data represents images of four colors of cyan, magenta, yellow, and black, and

wherein the halftone dot conversion section scatters the second drawing pixels out of the halftone dots, only when the color of the image is another color except yellow.

22. A halftone dot conversion program storage medium for storing a halftone dot conversion program which causes a computer system to operate, when the halftone dot conversion program is executed in the computer system, as a halftone dot conversion apparatus for converting tone image data representative of an image with tone values into halftone dot image data representative of an image with halftone dots having sizes according to the tone values, the halftone dot conversion apparatus comprising:

a tone value obtaining section that obtains tone values of the tone image data; and

a halftone dot conversion section that forms the halftone dots by sets of drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters blanks of the drawing pixels about the halftone dots, on at least a predetermined range of tone values.

23. A halftone dot conversion program storage medium for storing a halftone dot conversion program which causes a computer system to operate, when the halftone dot conversion program is executed in the computer system, as a halftone dot conversion apparatus for converting tone image data representative of an image with tone values into halftone dot image data representative of an image with halftone dots having sizes according to the tone values, the halftone dot conversion apparatus comprising:

a tone value obtaining section that obtains tone values of the tone image data; and

a halftone dot conversion section that forms the halftone dots by sets of drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters drawing pixels out of the halftone dots, on tone values except for a predetermined range in highlight.

24. A halftone dot conversion program storage medium for storing a halftone dot conversion program which causes a computer system to operate, when the halftone dot conversion program is executed in the computer system, as a halftone dot conversion apparatus for converting tone image data representative of an image with tone values into halftone dot image data representative of an image with halftone dots having sizes according to the tone values, the halftone dot conversion apparatus comprising:

a tone value obtaining section that obtains tone values of the tone image data; and

a halftone dot conversion section that forms the halftone dots by sets of a first drawing pixels number of which is associated with the tone values obtained by the tone value obtaining section, and scatters a second drawing pixels having a color lighter than a color of the first drawing pixels out of the halftone dots.

25. A dot matrix defining halftone dots consisting of sets of drawing pixels number of which is associated with tone values by an arrangement of thresholds to be compared with the tone values, the dot matrix comprising:

a first threshold group defining a set geometry according to the tone values; and

a second threshold group defining blanks scattering inside the set geometry defined by the first threshold group on tone values in at least a predetermined range.

26. A dot matrix defining halftone dots consisting of sets of drawing pixels number of which is associated with tone values by an arrangement of thresholds to be compared with the tone values, the dot matrix comprising:

a first threshold group defining a set geometry

according to the tone values; and

a second threshold group defining drawing pixels scattering outside the set geometry defined by the first threshold group on tone values except for a predetermined range in highlight.